

CAPI Case Management System Based on Wireless Telecommunications

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Outline

- Introduction WWAN technology
- Use of the 3G telecommunication technology
- Changes in case management system at Statistics Finland
- Additional features of new 3G hardware
- Expected benefits and foreseen risks
- Future scenarios and discussion

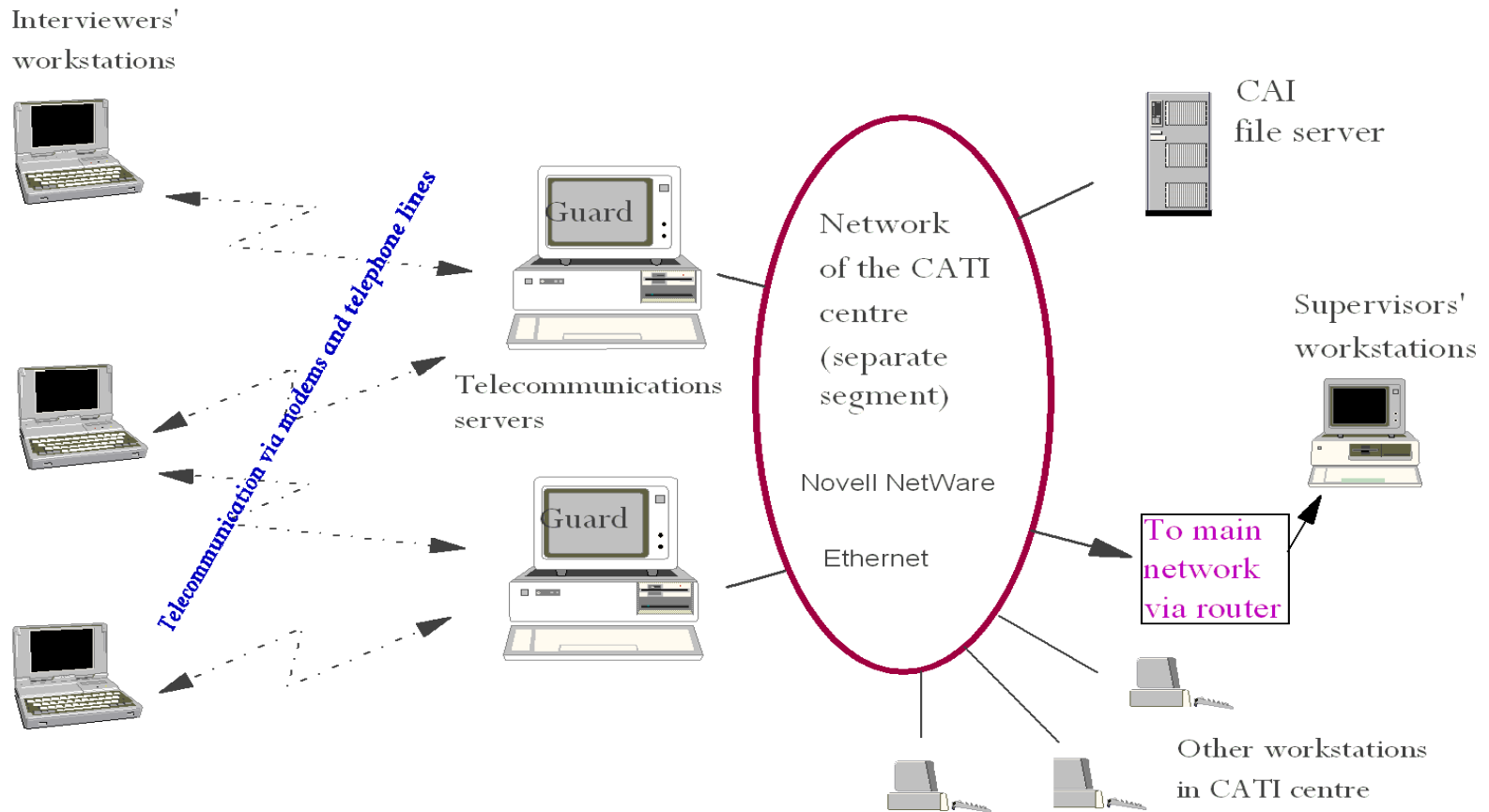
Wireless Wide Area Network (WWAN)

- WWAN uses mobile telecommunications network for to transfer data
 - Nearly the same as mobile phone network (GSM)
- Based on third generation (3G) of telecommunication hardware standards
 - Universal Mobile Telecommunications System (UMTS) is most common of the 3G technologies (in Europe)
 - In theory, UMTS supports up to 21 Mbit/s data transfer rates - in practice much less.
 - General packet radio service (GPRS) is a mobile data service for the 2G mobile communication systems (GSM).
 - GPRS provides data transfer rates up to 114 kbit/s
- Price based either on amount of data transferred or on fixed monthly fee

Current status of 3G

- WWAN is originally designed for the new mobile telephones but their use for wireless connection to the Internet increases rapidly
- In Finland, 3G/UMTS network covers the greatest part of country and GPRS covers the whole country
 - Currently fastest available transfer rates are 5 Mbit/s downstream and 2Mbit/s upstream
- For use with a computer a slot for a SIM card is needed either on mother board, on PCMCIA card, or in a connector to USB port.

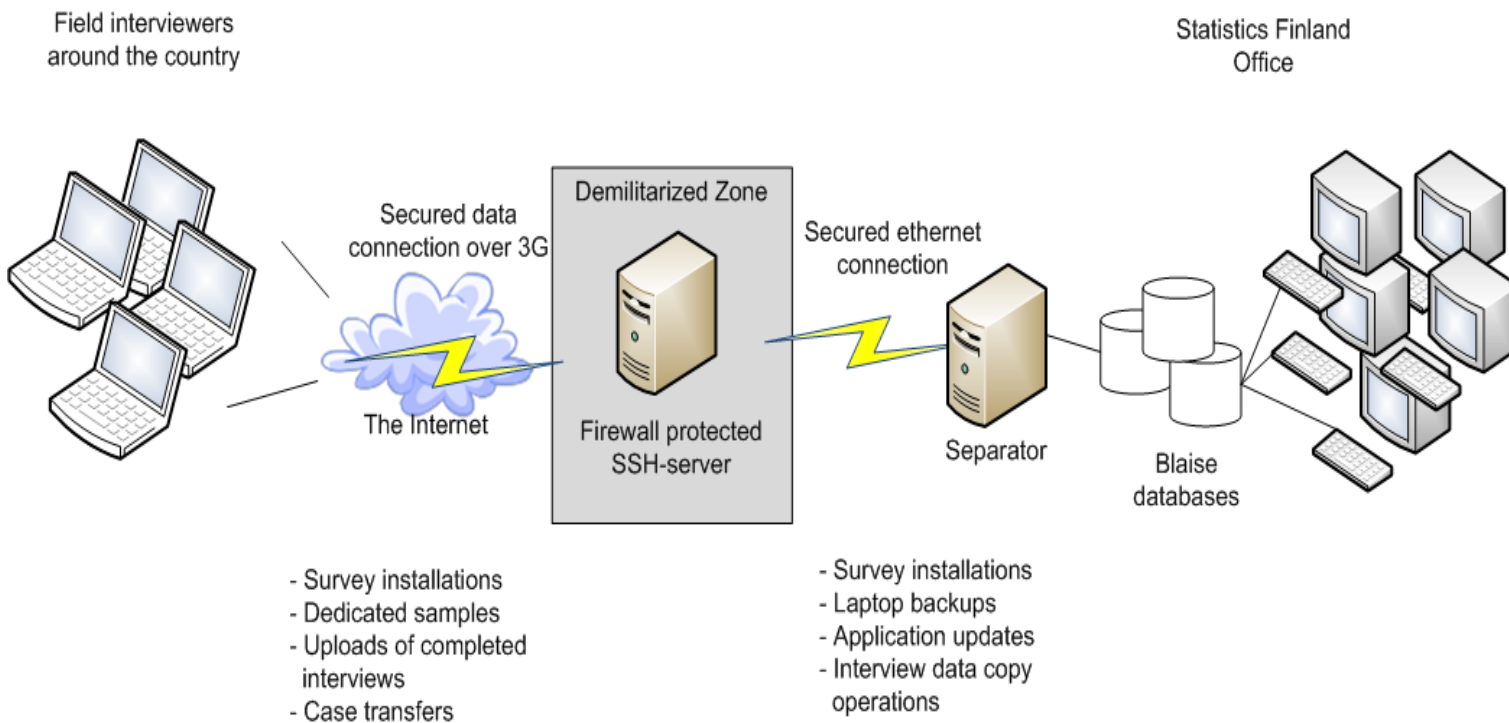
Old hardware design



Old arrangements in CAPI case management

- Interviewers had
 - laptop computer (with a modem)
 - landline telephone paid by Statistics Finland
- A tailor-made software for telecommunications
- At office, cases are assigned to interviewers by dividing sample file in separate interviewer files
- Interviewer fetches the dedicated sample file and questionnaire using modem communication
- Interviewer returns data daily using modem connection

Schematic display of technical arrangement



Building blocks of Case Management System

- Interviewer connection using 3G over the Internet
 - Fixed monthly fee, independent of transmitted data
- Data transmission with Secure FTP (SFTP)
 - Transmitted data are encapsulated to "objects"
- Firewall protected SSH-Server (Linux) on Demilitarized Zone
- SSH-server has Inbox and Outbox for each interviewer
- In Statistics Finland network computer called "Separator" polls SSH-server once in 10 minutes and delivers objects to appropriate places

Organisation in new system

- Interviewers have
 - Laptop computer
 - “Net stick” for WWAN access
- All telecommunication is arranged through the Internet and SFTP
- Cases are assigned to interviewers by inserting interviewer code to each sampling unit in sample file
- Each interviewer fetches the **whole sample file** and the questionnaire
- Interviewer’s user interface creates an interviewer’s view to sample file
- While interviewing, interviewer works off-line
- Interviewer initiates telecommunications session but after that sending and receiving data is automatic

Is it working?

- Time use survey started in mid April on the new system
- All interviews (~10 000) of monthly Labour Force Survey in May were completed without major problems
- The old system will be discarded by end of June

Computer as telephone

- Mobile Connect software includes also a telephone client
 - With a head set computer can be used as a telephone to make and receive calls
- Calls are “normal” mobile phone (GSM) calls (not VoIP or Skype calls)
 - Costs are the same as with mobile phones (not covered by the fixed monthly fee)
- Calling and data transmission are independent

Expected benefits of new technologies

- Faster and more reliable telecommunication
- Fixed monthly cost independent of connection times or amount of transmitted data
 - Overall costs will decrease
 - Considerable decrease if all interviewing is done with computer telephone client
 - New facilities for interviewers
 - Access to Statistics Finland intranet
 - Interviewers are clients to Statistics Finland email system

Potential risks

- Newtwork failures
- Sudden changes in technology

Future scenarios

- Technically case management with WWAN could be designed similar as in a CATI system
 - Storing data real-time in a central data base is possible already (on-line interviewing)
 - Either BlaiseIS or Dep
 - Case assignment to interviewers is more problematic and requires new approach
- Connection between interviewer and office can be arranged using e.g. VPN or Citrix
 - In Citrix system, only picture of screen and key strokes and mouse movements are transmitted, no actual data

The end

Thank you for your
attention